openreach

# SIN 480

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## Suppliers' Information Note

*For The Openreach Network*

# Openreach Ethernet Backhaul Direct (EBD)
## Service & Interface Description

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# 1. Introduction

This Suppliers' Information Note (SIN) describes the Ethernet Backhaul Direct (EBD) product supplied by Openreach. This product will inter-work between a Communications Provider's (CP) Point of Presence (PoP) located in a designated Openreach Access Serving Node (ASN) BT Local Exchange (using a licensed facility in the BT exchange), and a CP's core network PoP located in the designated Openreach Handover Point (OHP) as described in the Ethernet Backhaul Direct Product Handbook and ordered under the Ethernet Backhaul Direct schedule of the Connectivity Services contract terms and conditions.

Note that previously handover was also available in the CP's own site, accessed using a Bulk Transport Link (BTL). This option is no longer available.

Any specific technology mentioned in this document is current as of today, however it may be subject to change in the future. Should the specification of the interface be changed, this will be notified by a new issue of this SIN. Openreach reserves the right to adapt technology to deliver EBD as new developments are made. All services are delivered over an uncontended transmission path.

This SIN should be read in conjunction with SIN 360[6], "Ethernet Customer Interfaces: Interface Characteristics", and the Ethernet Backhaul Direct product handbook.

# 2. Service Outline

## 2.1 General

Ethernet Backhaul Direct (EBD) is an Openreach product that offers permanently connected, point-to-point high speed data circuits that provide a secure and un-contended backhaul service for Communications Providers (CPs).

This service will operate between a Communications Provider's (CP) Point of Presence (PoP) located in a designated Openreach Access Serving Node (ASN) BT Local Exchange (using a licensed facility in the BT exchange), and a CP's core network PoP located in the designated Openreach Handover Point (OHP).

Ethernet Backhaul Direct is available from a number of ASN (BT Local Exchange) locations across the UK. The list of allowable EBD ordering sites and those anticipated to be live in a rolling time period is available via the Openreach web site:

https://www.openreach.co.uk/orpg/home/products/ethernetservices/ethernetbackhauldirect/ebd.do.

The Ethernet Backhaul Direct service has no distance related elements (i.e. neither a radial or route distance limit nor distance related price component) between an ASN and its designated OHP(s). The reach of each service is governed by its ASN to OHP parenting. Details of the Access Serving Node

(ASN) to Openreach Handover Point (OHP) parenting are available via the link above.

Where an ASN and OHP are co-located (i.e. in the same building) EBD is not an applicable connection.

Ethernet Backhaul Direct services are offered at fixed Ethernet bandwidths of 1Gbit/s and 10Gbit/s only on an uncontended basis. Customer presentation is described in section 2.3.

Refer to the Ethernet Backhaul Direct product handbook for details of available Resilience Options.

A schematic of the Ethernet Backhaul Direct service is shown Figure 1.

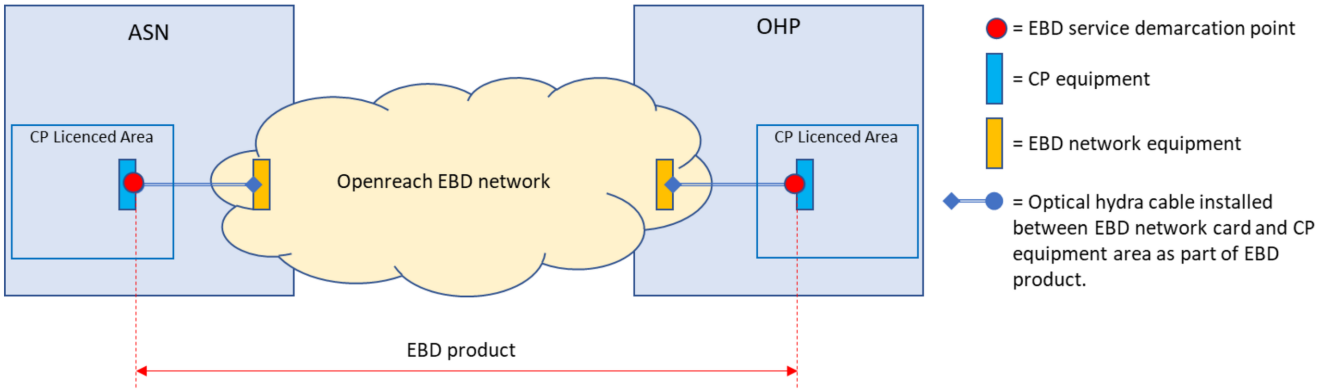
ASN
OHP
CP Licenced Area
CP Licenced Area
Openreach EBD network
EBD product
= EBD service demarcation point
= CP equipment
= EBD network equipment
= Optical hydra cable installed between EBD network card and CP equipment area as part of EBD product.

**Figure 1. Typical EBD service configuration**

**Note 1.** Figure 1 shows CP's identified interface as both a direct port connection and an interface panel, both of which are customer options.

## 2.2 CP's Identified Interface for Ethernet Backhaul Direct termination

Service demarcation will be between the CP's identified interfaces in CP areas of an ASN or OHP site.

The identified interface could be either (to be captured during order request):

1. CP owned and provided Interface Panel
2. CP owned and provided equipment interface (Ethernet port)

The interface is the Circuit Terminating Point (CTP), i.e. the connector on the end of the Openreach fibre tail.

Only the following physical optical interface connector types are supported for the CP provided identified interface for EBD products:

- FC/PC (Fibre Connector / Physical Contact)
- LC (Lucent Connector)
- SC (Subscriber Connector)

The physical interface must be specified on the order request. Any conversion of interfaces is the CP's responsibility, i.e. the CP must provide interface converters on its card or at the interface panel, if necessary. Openreach engineers must be provided with access to the identified interface point (whether that is an interface panel or the CP's actual interface card itself) for both fulfilment and assurance purposes.

**Note 1.** Angle Polished Connectors such as SC/APC and LC/APC are NOT supported.

**Note 2.** Where a multimode fibre interface is chosen, i.e. 1000Base-SX Ethernet interface, transmission performance can only be guaranteed if 50μm core fibre is used between the CP equipment (CP Ethernet port) and the Openreach/Customer interface.

## 2.3 Ethernet Interfaces

The Ethernet interfaces available for the Ethernet Backhaul Direct products are shown in Table 1. These interfaces will be used for the Openreach Ethernet port, see Figure 1.

The Ethernet interfaces conform to the IEEE 802.3[1] Ethernet framing and supports the transport of untagged, and tagged frames conforming to 802.1q[2] or IEEE 802.1ad[7] encapsulations.

**Note 1.** CP equipment must have Auto-negotiation enabled on Gigabit Ethernet interfaces.

### 2.3.1 Transmission

Customers can, if required, use spanning tree packets (IEEE 802.1d[3], IEEE 802.1s[4] or IEEE 802.1w[5] control packets) across the Ethernet interface. The BT network will not participate with the spanning tree protocol, but will transport spanning tree BPDU (Bridge Protocol Data Units) unchanged between customer sites.

The access speeds currently supported are listed in Table 1.

| Ethernet interface (valid for EBD services that terminate at an OHP) | Fibre Type | Subject To Survey (Due to distance limitations) |
|---|---|---|
| 1000Base-LX (Gigabit Ethernet - IEEE 802.3[1]) | Single-Mode | No |
| 1000Base-SX (Gigabit Ethernet - IEEE 802.3[1]) | Multimode | Yes |
| 10GBase-LR (10Gig Ethernet LAN PHY - IEEE 802.3[1]) | Single-mode | No |

**Table 1. Network Interfaces**

**Note 1.** Please refer to SIN 360[6] for detailed Ethernet interface specifications.

### 2.3.2 Gigabit Ethernet Frame Length

The service is capable of supporting IEEE 802.3 frames of 2000 bytes in length, as well as being capable of transporting Jumbo frames of up to 9000 bytes in length to maintain compatibility with a large number of vendor proprietary frame tagging formats. Service Performance however cannot be guaranteed when transporting Jumbo frames as they are not covered by the IEEE Ethernet standards. The frames are transported in both directions, full duplex, at wire-speed.

### 2.3.3 10 Gigabit Ethernet Frame Length and transparency

The service is capable of supporting IEEE 802.3 frames of 2000 bytes in length, as well as being capable of transporting Jumbo frames of up to 9000 bytes in length to maintain compatibility with a large number of vendor proprietary frame tagging formats. Service Performance however cannot be guaranteed when transporting Jumbo frames as they are not covered by the IEEE Ethernet standards. The frames are transported in both directions, full duplex, at wire-speed.

IPG (Inter Packet Gap) is transported in addition to the Ethernet Frame. 10G Ethernet WAN PHY interface is not supported by this service.

## 2.4 Ethernet Backhaul Direct product features

Table 2. outlines the features supported by the Ethernet Backhaul Direct product.

| Product | Ethernet Interface | Product Speed | Link Loss Forwarding |
|---|---|---|---|
| EBD 1000 | GigE | 1Gbit/s | Yes |
| EBD 10000 | 10GigE LAN PHY | 10Gbit/s | Yes |

**Table 2. Product Feature Support**

**Note 1.** MAC Address learning is not supported on the Ethernet Backhaul Direct product.

# 3. References


| | |
|---|---|
| [1] | IEEE 802.3: CSMA/CD access method and physical layer specifications, 2005 |
| [2] | IEEE 802.1q, VLAN tagging of Ethernet frames, 1998 |
| [3] | IEEE 802.1d, Media Access Control (MAC) Bridges |
| [4] | IEEE 802.1s, Virtual Bridged Local Area Networks – Amendment 3: MSTP |
| [5] | IEEE 802.1w, Media Access Control (MAC) Bridges – Rapid reconfiguration |
| [6] | SIN 360, Ethernet Customer Interfaces, Interface characteristics, https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do |

| | |
|---|---|
| [7] | IEEE 802.3ad, IEEE standards for Link Aggregation (LAG) |
| [8] | IEEE 802.3ah, IEEE amendment , 2004 |
| [9] | Withdrawn. |
| [10] | Ethernet Backhaul Direct product handbook. https://www.openreach.co.uk/orpg/home/products/ethernetservices/ethernetbackhauldirect/ebd.do |

## 4. Further Information

For enquiries concerning connection availability between particular sites and for further product information about this service please visit the website at www.openreach.co.uk or contact your Openreach Customer Business Manager or BT Account Manager.

For further information or copies of referenced sources, please see document sources at https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do

## 5. Abbreviations

| | |
|---|---|
| BT | British Telecommunications plc |
| CD | Collision Detection |
| CP | Communications Provider |
| CPE | Customer Premises Equipment |
| CSMA | Carrier Sense Multiple Access |
| FC / PC | Fibre Connector / Physical Contact |
| GE | Gigabit Ethernet |
| IEC | International Electrotechnical Commission |
| IEEE | Institute of Electronic and Electrical Engineers [USA] |
| IPR | Intellectual Property Right |
| LAN | Local Area Network |
| LC | Lucent Connector |
| MAC | Medium Access Control |
| MSAN | Multi Service Access Node |
| MSTP | Multiple Spanning Tree Protocol |
| MTU | Maximum Transmission Unit |
| NTP | Network Terminating Point |
| SC | Subscriber Connector |

| | |
|---|---|
| SIN | Suppliers' Information Note [BT] |
| TBC | To Be Confirmed |
| UK | United Kingdom |
| VLAN | Virtual Local Area Network |

## 6. Document History

| Issue | Date | Revision changes |
|---|---|---|
| Issue 1.0 | 22 April 2008 | First issue. |
| Issue 2.0 | June 2010 | Introduction of 10Gbit/s option |
| Issue 2.1 | July 2015 | Change SINet site references from http://www.sinet.bt.com<br>to http://www.btplc.com/sinet/<br>Change to the url for the Ethernet Backhaul Direct product handbook. |
| Issue 2.2 | July 2017 | Updated clarity on BTL availability associated with EBD. |
| Issue 2.3 | October 2019 | Removal of references to Bulk Transport Link (BTL) |
| Issue 2.4 | September 2020 | Changes to branding, from BT to Openreach including changes to reflect new Openreach SIN site and Openreach SIN email address |
| Issue 2.4 | August 2021 | Annual Review – no changes required – issue remains unchanged. |
| Issue 2.4 | August 2022 | Annual Review – branding and font changes only – issue remains unchanged. |
| Issue 2.4 | September 2023 | Annual Review – branding and font changes only – issue remains unchanged. |
| Issue 2.4 | October 2024 | Annual Review – branding and font changes only – issue remains unchanged. |

**– END –**